

Highly Durable Catalysts for Ignition of Advanced Monopropellants, Phase I

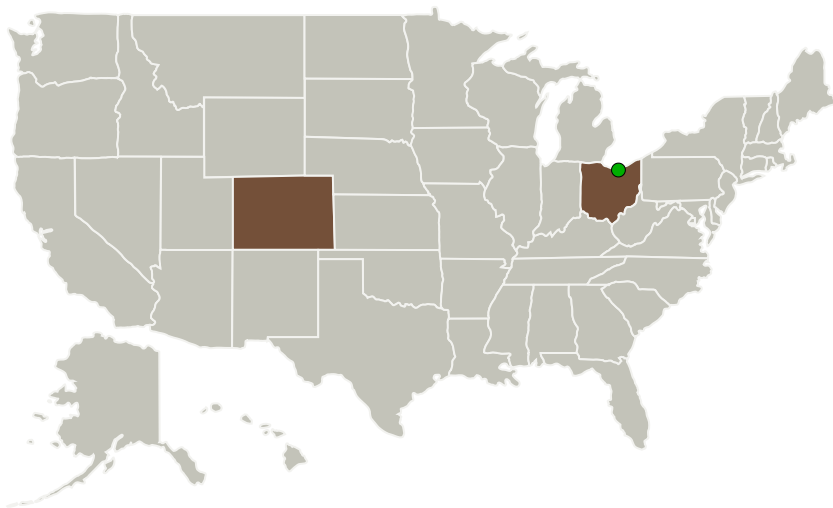
Completed Technology Project (2012 - 2012)



Project Introduction

Monopropellants are readily ignited or decomposed over a bed of solid catalyst. A serious limitation of existing catalysts in the ignition of advanced monopropellants is limited thermal stability. The recent emphasis on improved performance of monopropellant technology (e.g., with AF M315E and LGP 1846), has led to the need for advanced materials possessing exceptional properties. Increased specific impulse monopropellants will require ignition catalysts possessing exceptional thermal stability and ruggedness: Existing alumina supported iridium catalysts do not possess these characteristics. This proposed SBIR Phase I will be addressed to the further development of thermally stable high temperature ignition catalysts, optimization of their mechanical strength and erosion resistance, and employment in small propulsion devices. Eltron previously identified a catalyst which displayed activity comparable to alumina supported iridium (Shell 405) but which tolerates temperatures in excess of at least 1900 degrees C, is markedly less dense, is precious metals-free, and is much less expensive. Phase II will optimize the catalyst, demonstrate activity and ruggedness with a number of monopropellant systems, scale up catalyst preparation, and conduct test firings with the catalyst system.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Eltron Research & Development, Inc.	Lead Organization	Industry	Boulder, Colorado
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Colorado	Ohio

Project Transitions

▶ **February 2012:** Project Start

✓ **August 2012:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138175>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Eltron Research & Development, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

James White

Co-Investigator:

James D White

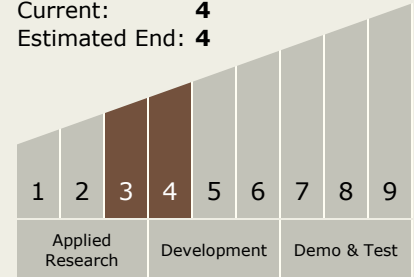
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Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.4 Manufacturing
 - └ TX12.4.1 Manufacturing Processes

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System